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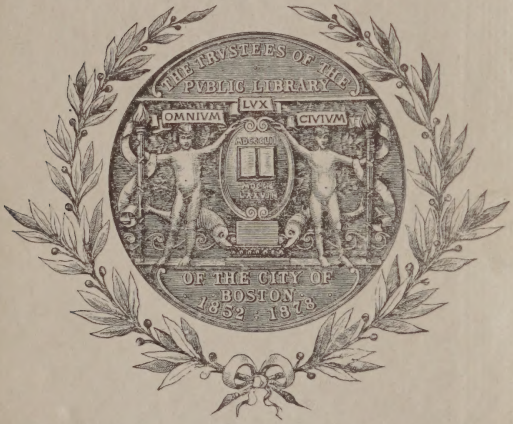
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SEA-SICKNESS:

ITS

CAUSE, NATURE, AND PREVENTION

WITHOUT MEDICINE OR CHANGE
IN DIET.

A SCIENTIFIC AND PRACTICAL SOLUTION OF THE PROBLEM.

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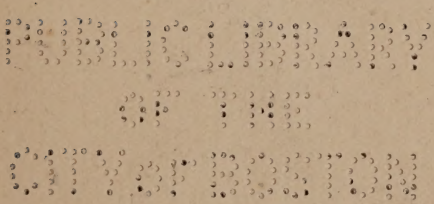
BY

WILLIAM H. HUDSON.



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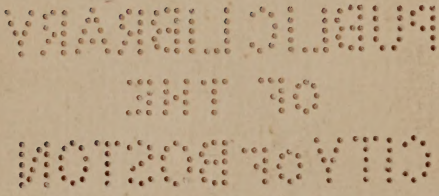

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PREFACE.

In this little volume the author presents a method by which the ocean traveller may secure immunity from sea-sickness, without change in diet or aid of medicine.

Athough occasioning great sufferings, and sometimes even fatal in its effects, sea-sickness is not a disease, properly so called. It is due solely to the violations of natural laws, through ignorance of their true nature; and its prevention is possible to all by the use of correct principles, simple in themselves and easy in their application. The information herein offered is the result of observations and experiments made upon the ocean, and carefully noted during a period of more than twenty-five years.

If universally acted upon sea-sickness would at once cease to exist.

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AN APPEAL TO PHYSICIANS:

The work here presented discloses for the first time the true cause and nature of sea-sickness. It is written so clearly and simply that all may understand and apply its teachings; but great numbers of people prefer oral instruction to reading, and naturally will apply to you for advice. You have earned this confidence by your life-study of the healing art. You can impart information acceptably when the printed word would fail. To you I commend my little volume, believing that you will at once perceive its truth, and welcome it as a valuable helper in lifting from the suffering sea-traveller the crushing burden he has so long borne.

MAY 7, 1883.

SEA-SICKNESS.

CAUSE, NATURE, AND PREVENTION.

I.

ADDRESS TO THE READER.

In commencing this work, I ask your permission to use the personal form of address, and a familiar style, that I may the better win your interest, dispel possible prejudice, and induce you to weigh with candor the statements I shall make.

My topic, in common with all scientific subjects, forbids the felicity of expression, the poetic fervor, and finish of style required by those which are purely literary. Clearness, precision, and force are alone necessary; and these I have attempted to attain. If I have offended by repetition or undue fulness of statement, I plead in excuse the earnest desire

to simplify my instructions, and so adapt them to the needs of the busiest, the most careless, and the least instructed of my readers.

This book is the outgrowth of my own personal experience, written after I had fully attained control over sea-sickness in my own person. It was then, and not before, that it occurred to me that the facts which were quarried out to serve me should also become the servants of others, who, like myself, are victims.

Difficulties occur in producing the facts which form this work not usual in book-making. Previous writings upon this subject afford no light or guide upon it. It has ever been a "dark continent." To enter it was to come at once into a trackless jungle, filled with every obstructing medium which the name of jungle implies. Such is the appearance of sea-sickness to the observer when groping among its effects in the human body. The nature of these effects are boisterous; they becloud the observer's vision and im-

pede his search; they completely obscure the still and silent cause.

Works treating upon the human body, which are worthy of respect, uniformly characterize sea-sickness as incurable; and it is no wonder that this is so. Out of this state of recorded knowledge has come a habit firmly fixed in the public mind that no hope was to be expected. To change a habit of mind is no less difficult than to change a habit of body. It cannot be accomplished by force, as the mind is free. It became necessary for me to surround the subject with copious details of facts, the nature of which must be made plain to the understanding. Such were the grounds which claimed my attention as I commenced this book; and to their considerations I have adhered in its composition. This will account for what at times, perhaps, may be deemed irrelevant matter, but which the reader may find, ultimately, none too full when he becomes entangled in an ocean storm.

The subject of sea-sickness has been of deep interest to me for many years. I loved the ocean for its (to me) concealed wonders. This love seemed to have been born with me in my inland home. It became in my early boyhood a passion. My mental eye fairly feasted upon its wonders. My little fingers were busy in tracing out its winding boundaries upon my school-maps. My young mind was made quiet and happy, in the corner by the evening fire, by the story-books of the sea. Thus my mind filled the trackless spaces of the great ocean with all that was free and grand.

At an early period of life I removed to the coast, and for the first time saw the wide Atlantic. Visions of intense enjoyment in making a closer acquaintance with its mysterious charms rose before me, to be checked but too soon by a knowledge of that remorseless power which exacts the tribute of suffering from all who sail its waters. Yet my ardor was not extinguished — was, indeed,

hardly moderated, — on the contrary, I resolved to attain my end, even at the expense of physical discomforts, while I believed a prevention might be found if faithfully sought.

After a time business required of me a sea-voyage. I welcomed the opportunity for investigating at leisure the cause of sea-sickness as the first step to its relief. The knowledge acquired by this experience was very limited, and that even was sadly marred by the sufferings inflicted on me. Still eager for knowledge on this point, I resorted to libraries, but books that were treasuries of learning on other subjects were silent on this. I conversed with physicians, but they were more profitably employed than in considering questions deemed unanswerable. I inquired of scientific men, but they were still more reticent. The world seemed to wear a dull and lowering look upon this subject, which was well-calculated to squelch my enthusiasm. It exhibited a unit of unbelief. This appear-

ance somehow, did not have any effect in deterring me from inquiry. There was an honest, sturdy unbelief to be met everywhere, which was as firm as adamant, that sea-sickness could never find relief; and such is still the case. Indeed, as my mind runs back over the lines of thought in past ages, I find ever the same dull plane of apathy and indifference.

Thus compelled, (as it were,) I continued to study without aid, and the results of these many years form the warp and woof of this volume.

And now, dear reader, although you can hardly be otherwise than skeptical on this matter, yet if you will keep your mind unbiased and receptive, I will offer you convincing proof of the theory I am about to advance. I will show you that sea-sickness is not a necessary evil, but that it can be prevented by simply obeying the laws of nature. If you will study attentively and practice faithfully the system of muscular training of

which I shall explain the method and necessity, you can sail the ocean with as absolute immunity from the sickness it usually inflicts as you can travel by land.

Strange as this may seem, and doubtful as it may now appear to you, this evil of six thousand years of recorded life may be utterly vanquished; and that, too, by the simple use of only your own powers, which were vested in you by your Creator for that very purpose. In this age of enlightenment and augmented facility, ignorance upon this matter seems to have the rank odor of crime about it. It has filched untold delights from the weary and worn landsman. Its occasioned losses to the world are untold and not to be estimated. The treasuries of art, the current culture, the vast inheritance from a common ancestry, whose homes and works remain in the keeping of a European kindred, are still viewed as sacred, and command an interest and a reverence from the far-off children in their western homes. The European is not

less interested in the fresh life and elemental achievements of their western lineage. Among these are thousands on thousands of men and women lavishly endowed to appreciate, to understand, to criticise, to write, to correct, and thus to straighten the lines and expedite true progress.

The orderly workings of these natural and beneficent methods are marred and hindered by sea-sickness. Numbers, not a few, having crossed the ocean and suffered from this cause, remain in exile, accepting voluntary banishment from home and kindred rather than risk the ordeal of a return voyage.

The benefits of the ocean itself have been largely denied or neutralized to those most sorely in need of its healing powers. The ocean is, indeed, a health-giver. A fountain of healing waters, whence comes vigor and renewed pleasurable existence to the broken and brain-sick man of the land, — a place of rest nowhere else to be found in equal purity and perfection.

It comes to be my task, and is a pleasure, to point the way to the correction of errors, and the attainment of gifts which have been held in store for man for all time. I do this boldly and in fearless confidence. I shall direct your steps in no pathway which has not been trodden by myself, and found to be secure and practical. I ask your candid attention.

That very law which moulds a tear
And bids it trickle from its source;
That law preserves the earth a sphere
And guides the planets in their course."

II.

SEA-SICKNESS: ITS CAUSE, NATURE, AND PREVENTION.

All efforts for the prevention and control of sea-sickness have hitherto been made through the medium of drugs. These are in themselves disturbing causes. Just in the proportion that they act at all, they lessen instead of increasing the chances for the patient's comfort.

Sea-sickness results from disobedience to natural laws. Such being the case, it is necessary to ascertain precisely what those laws are, in their application to, and de... upon, the human body.

This involves a very brief recapitulation of some of the elementary facts of physiology. By way of general explanation, I would state that the construction of the nerves and the two orders of muscles are amply described in books which are accessible to all, and it is, therefore, needless for me to speak of them only so far as their use may serve to explain my subject. I shall generally discard the use of the word stimulus, and make use of the word life, instead, when treating of the motive power which acts upon man's body.

The motions of the human body are produced by the action of the muscles. There are between five and six hundred separate muscles employed in the body for the performance of its duties. These are arranged in two grand divisions, known as voluntary and involuntary. The latter is used by the vital organs, and has a character peculiar to itself, by which it is enabled to work under the mysterious power of life, with ceaseless

activity, without fatigue, and substantially, without government from the mind.

The voluntary system is ramified by nerves of sensation and motion, which traverse in pairs the whole system, leaving no minute part unprovided; thus furnishing a system for the supply of power, and also a system of telegraphy connected directly with the brain, the seat of intelligence and the home of the mind, — thus making the mind omnipresent in the body. Thus, the voluntary sytem of muscles is under the control of the mind. Consequently the mind is placed in the command of the motions of the body, which they are made to obey with precision and despatch.

These voluntary muscles are subjects for education during all orderly life in the body. This education in the child is conducted by long and tedious experiment and imitation, and supplemented by extensive exercise. In the adult the mind comprehends and directs, and practice insures the result, thus fitting

the muscles for their respective duties. Practice must ever be an essential element in the formation of all motions if the body is to become a perfect instrument for the mind. A time comes when the muscular education is so far complete that passable motions may be produced on the first attempt, but repetition will add dignity and grace and otherwise improve them.

The muscles are separate organic forms, highly endowed with life. They may act separately during states of disorder; but when in order they act, in a sense together, under what is known as reciprocal action, — which really is a confederation or correlation of the muscles, — and secure to the body the complete unity of force. Each muscle merges its own individuality in that of all the others, and the whole work under the dictates of the mind as one muscle. The mind, therefore, has by a single impulse the total force of the body under its instant command.

The nerves are minute, filmy sheaths, in which is contained substance similar to that of the brain, and are outcomes from the brain, substantially a part of it. They are inert, void of motion and strength, and are endowed with the property by which they transmit sensation and life. Thus they are vehicles for thought and feeling. Their office is to convey intelligence and power, and in this service the mind employs them.

The nervous and muscular systems form substantially the realm of the body, over which the mind holds sway. And while laws are obeyed, this realm is a most agreeable abode. It is guarded on every hand. Nothing however trivial can enter this immense domain without in some way affecting the whole. Hopes, fears, affection, sympathy, in short, all emotions flow through the body, changing its action and producing different manifestations. We may realize this, in a partial degree, in the face of a friend with whom we may be in conversation. All the

delicate changes there occurring, and multitudes besides which are invisible, are but the production of this perfect and wonderful instrument in the employ of the mind.

The reader may now see what a force is placed at his command. The nerves are his messengers, the muscles are his servants. Every motion he desires, be it slow or quick, soft or harsh, careless or precise, will be instantly executed. There is no practical limit to the changes and manifestations possible by means of the combined use and action of the nerves and muscles.

In the few preceding words I have brought to your attention in sufficient detail for my purpose the means at your command, which, if used intelligently, will exempt you from sea-sickness, and perhaps afford you a means of comfort in other important relations in life.

I will now consider what we shall experience and be called upon to overcome by the orderly use of the powers which have been

traced as being at your command. The most prominent of these is gravity. This we understand as an elementary force in the universe. It acts upon all objects, compounds, and things, keeping all in a fixed and definite position with reference to the common centre of our globe. This is its aim, and for this it is furnished with a mild, but at the same time irresistible power. When objects or things obey gravity they are said to be in equilibrium. They are really at rest. In this state the man is altogether unconscious of the existence of any such force acting upon his body. If the body for any cause is thrown out of this relation, it becomes the instant effort of gravity to restore it.

The actual operation of this law is seen when a stone is started from the top of a declivity. That stone will become content only when it reaches a place of rest. We see the true line which gravity imposes upon the human body, which secures perfect rest

to the body, in the plumb-line and ball. The ball set in motion will finally come to a rest. This is done by gravity alone. We are unable by calculation to determine this point until it is marked by the unbiased movement of the ball coming to a rest. Whatever opposes this law must inevitably experience defeat. It acts upon the body as a whole, and also on all the adjuncts of the body separately.

The fact that certain compounds are enclosed in vessels does not interfere with the action of gravity. Solid, fluid, or aeriform substances alike obey it. The motions of the body are influenced and are equally amenable to it as the vast masses of the planets which roll in stellar space. The effect of this attracting power upon the fluids of the body, and every atom or particle which compose the body, may be seen objectively by placing water in a dish and changing its level. The water will move from side to side in strict obedience to

gravity to come to rest at a place the nearest to the actual centre of the earth. The body is composed of four-fifths fluid, which endeavors to perform the same thing as the water in the dish, when the body antagonizes gravity. Fluids in the body in some degree act as graduators to enable the body to conform itself to gravity, similar in this respect to the ocean, which acts as a movable graduator for the globe, thus holding the earth to the form of a sphere in agreement to this law.

We come naturally to details in this study for the purpose of seeing what occurs to the body under ultra conditions. It has been stated above that the unity of force and consequent order of the body depends upon the reciprocal action of the muscles. If this is disturbed, the mind is dethroned. It loses its command of a united force, and order is gone. We may readily appreciate the condition if we reflect that some hundreds of muscles, all abounding with life and action, are cast loose, and work, each more or less, in its own way

without a central authoritative commander. Disobedience to gravity causes the suspension of the reciprocal action of the muscles, and there is imposed upon the body the above disordered condition. This is what we call sea-sickness. Sea-sickness is by no means a disease, as has always been suspected. Yet this is not saying much in palliation. The organs are all in a healthy state, but they are in awful disorder. If we compare sea-sickness with other ailments, as to human suffering, it outranks anything which I can conceive of, and I am not destitute of competent knowledge as to sea-sickness in my own person in all its phases. I am also tolerably well-informed as to the sensations produced by extracting teeth.

There is always a specific point in man's body nearer than any other to the centre of the globe, which is known as the centre of gravity, to which the superincumbent mass above must adjust itself. This is also called the point of rest. If no movement of the

body takes place, it is maintained in this state of equilibrium; but as soon as any motion disturbs this arrangement gravity asserts its power. If the head and arms are thrown forward, a leg and foot must be thrust backward to maintain equal pressure over this point of rest. If the head is pushed still further forward without a corresponding movement backward, we become giddy. This, we may regard, as a timely warning that the equipoise is broken. If we continue to advance our upper body beyond the line of gravity, the body will be thrown to the ground.

Few, perhaps, fully realize how friendly and beneficent this power which holds the universe in order is to the human body. When men violate its laws it gives the gentle warning of giddiness while on the land, and it sends gentle notice on the water, in the form of nausea, before proceeding to exercise its terrible force by which the man is thrust down to a place of rest, that he may

regain his equilibrium, or agreement with gravity.

In general, we do not take account of gravity through any action of our minds. We learn about it in childhood by many a hard bump on our heads, and not a few bruised bodies. In that way it became a perfect habit, — so perfect, indeed, that our bodies respond to the most gentle hint of gravity, and thus we are protected. It has become so common with us all that we do not think about it, even when it is highly important that we should do so. If we go upon the edge of a high cliff or lofty building, and become dizzy, we do not always think that gravity has become offended, and that it is the cause of this peculiar sensation. Yet, if we would reflect, we should perceive that fear had become an adjunct of the mind, and caused the body to shrink away from the line of rest, and that gravity now interposes its authority to draw us away from danger by this significant warning of dizziness.

Fear in the mind dulls the fine instincts of the body, and the mind is deprived of correct information. In this way the delicate hints of gravity, which are the natural safeguards, are disregarded, and the body is unwittingly led into absolute rebellion to gravity, and is really the victim of fear. Further on we shall have occasion to say more about fear, as it is an active and vigilant enemy at times, and shall be duly unmasked for your benefit.

It must be quite apparent that gravity brings the man into subjection to its requirements by regular stages of progress, when possible — the first being its external warning, followed by the internal reaction of the fluids which completes the demoralization, — and thus the government becomes a wreck. Each stage leaves a chance for the man to correct his error, if he will.

I have spoken thus at length on the nature of gravity, because its methods of action are apparently obscure in the minds of the

greater number of people who are very intelligent upon other matters. Moreover, it is only through this ignorance that sea-sickness has baffled the observers of the past, and practically controlled the human race since the world began.

But the question arises, how has it done so? The answer is, when I am on the ocean my centre of gravity is moved from its accustomed place by the incline of the deck, occasioned by wave-action on the ship. My mind is unprepared for this change. It is occupied by observing the new and strange surroundings, of sea and sky, and vessel, and does not pay attention to the demands of gravity. Fear defined, or undefined, enters the mind, and lends a hand in the prevailing confusion; nausea sets in, and this warning is not understood, and prostrating sea-sickness will follow apace unless I yield at once to the dictates of gravity, which has at this point become pretty thoroughly offended.

But precisely how am I to do this? We will see. When I am on the land if I do anything which disturbs gravity, I resist it with muscular tension, and this is proper there, and restores harmony. On the ocean I naturally, from long habit, attempt the same thing, but here it is all wrong. Gravity is the same on both sea and land; but if I resist on the ocean, the effort is at once nullified by the moving surface. I feel the conflicting influence of two opposing forces, gravity and wave-action, and both are absolutely irresistible. Therefore, before I can become at ease, I must yield obedience to both these powers, and the only way left to do do this is to relax my muscles. This I can do by the simple determination of my mind; since, as we have seen, the muscles are truly and entirely under mental control. My body instantly becomes pliant, and yields to both the overruling powers.

When the muscles are held in tension, by which the form is maintained erect, and

the bodily movements are made sharp and decisive, the weight of the body is distributed among all the muscles. Each supports its part, while at the same time, like pressure upon a coil of wire, tension makes each muscle a spring. This gives an elastic step, which is the characteristic of the most approved gait for land. This habit cannot be transferred to the ocean. Gravity and the motion of the sea absolutely forbid it. Gravity and the ocean both compel the use of muscles in dominant relaxation. They must and will have loose muscles. If you try to evade this, you will surely pay the penalty, which is sea-sickness.

We will see how this dominant relaxation works, and what its mode is of producing such a revolution in such an easy way. I have stated above what tension does, and how it disposes the weight of the body. We find that relaxation acts quite as efficiently in another way. It places the weight of the body in the feet. It becomes abso-

lute ballast for the body, and thus leaves the upper parts of the body light, and in a perfect condition to obey gravity with no resistance. The true line and centre of gravity is perfectly accommodated by a process the exact opposite to that in use upon the land. When relaxation takes the weight to the lowest part of the body, the same thing is done for the body as we perform in placing ballast in the hold of a ship, and it is for the same reason in both that gravity may be thus accommodated.

Such is the nature of sea-sickness that if a person when on the sea is able, either consciously or unconsciously, to yield passively to the varied demands of the forces that act upon him, he finds no discomforts. But if he persists in doing as he would upon the land, he finds two forces warring in his members. His muscles, hard to their utmost rigidity, are trying to hold the particles, both fluid and solid, of his internal organs in one place, while the motions of the vessel and the

attraction of gravity are continually drawing them to another place. Between these forces the poor victim becomes a sorry wreck, and giddiness, nausea, and sea-sickness close in upon him, and he becomes a prisoner with tortures which must be felt in order to be understood.

It will thus be seen that the perfect and only remedy for sea-sickness is relaxation of the muscular system. [illegible] mprehended and diligently prac[illegible] ecomes a habit.

This process of holding [illegible] ely is as easy as that of tensio[illegible] s much easier, only, as it is a ne[illegible] quires a short season of attention [illegible] cise in order to fix the habit, or t[illegible] from one to the other with ease.

If your mind is fairly convinced without any lingering doubts or uncertainty, all impediments will disappear and the habit will be yours at once, — and so perfect will it become that your body will be guarded in its

slumbers with equal care as when you are awake.

A comparison of motions on land and sea will familiarize your mind with this subject. When I walk up and down, and around the sides of a hill which inclines at an angle of thirty degrees, I feel no inconvenience in consequence of this sharp incline. I am not dizzy, nor do I think about gravity. If I analyze my motions, I find that in the ascent I leaned forward with the upper parts of my body. In the descent I lean backward. In moving round the hill I shorten the leg on the up-hill side, and lengthen the leg on the down-hill side. This is what we all do under relaxation of our muscles, and it is all performed by an automatic process which has caused us no conscious thought.

When on shipboard I find the vessel rolling, my motion to accommodate this is the same as that of passing around the sides of a hill, and when the ship pitches, and tosses up

her bows in mounting a sea, my motions are the same as in going up and down the hill; therefore these movements are not wholly new to me; and, if no fear has crept into my mind, I can perform them without much embarrassment.

There are, however, motions produced by the ocean swells which are so widely different from anything experienced on land, and so highly imporant that they require a detailed description. The swell is by far the most dangerous motion which we meet. These swells themselves are generally known as tidal. They exist in all waters which ebb and flow. They are present and extremely effective for mischief to our land-trained bodies on a glassy sea. They are increased in magnitude but unchanged in regularity by winds. They may be seen, a spent and dying force, as they roll in upon the beach. On the blue waters of the broad ocean they are the very ideal of majesty, and the mind unconsciously receives their steady

and measured semblance of breathing as evidence of life.

These swells are smooth and lengthened masses of water. They are undulations without progress. Their altitude is various, sometimes hardly noticeable, and without a ripple or fleck upon their surface. Winds act on them quickly, producing ripples, increasing the ripples to white caps, and then tossing and tumbling them into a wide expanse of dancing, flashing foam crests; or the wind may become a gale or tempest, when all in view is one vast roaring and tumultuous mass of chopped and broken swell and threatening billows. Such are some of the surroundings in which you will find yourself upon the ocean.

Mark the contrast between the calm and changeless land you have left and this restless surface, on which you are to learn to find a quiet and comfortable home.

The ship before she leaves the wharf takes in ballast, which acts upon her in the same way

as the leaden ball upon the plumb-line. The dash of the waves and the action of the swell destroys the state of rest induced by gravity, and moves the ship out of its true line. The frantic effort of the ship under the pressure of her ballast to restore her equipoise produces peculiar motions, which are made noticeable by the changing incline of the deck. These motions are the true seat of our difficulty, and it is, therefore, necessary to explain them with some degree of detail. A ship pitches, rolls, lurches, rises and falls vertically, staggers, trembles, takes on a permanent list, and makes other less important motions. All these are subject to varying degrees of intensity. There is no such thing as a simple motion of a ship; all are compound, made up of two or perhaps the whole catalogue given above. Every addition increases the complication of the resulting motion which acts upon our bodies. The pitch, roll, and the vertical movements are a constant compound. The lurch is occasional, but hard

to bear, as it is irregular, — produced by a glide of the ship out of her true course as she passes diagonally downward to the hollow from the top of a swell.

The vertical, or rise and fall, occasioned by the tidal wave, or swell, is a part of every movement, and is the most to be feared. It is ceaseless and new; the land affords to us no parallel. It causes in us the feeling that the ship will never cease moving upward, or downward, unless we resist with all our might. This we do involuntarily with muscular tension, although we cannot but perceive that our opposition reacts upon ourselves in the same proportion to the force expended. The muscles become rigid, or tense, and this resistance results in certain sea-sickness. To prevent this, or cure it, if it has acquired foothold, we must make use of the precise opposite to tension, which is its perfect antidote; namely, relaxation or non-resistance, which is simply a pliant, supple condition of the body.

This vertical motion, from its force and constancy, is the underlying element among the motions that act with the most potent power in producing sea-sickness. It may be illustrated by the common swing, with which its motions are very nearly identical. To make the illustration quite complete, the ropes for the swing should be about twenty feet in length, thus giving a long sweep, which is a glide upward and downward. So long as we use muscular exertion to extend and prolong the sweeps we experience delight; the swing becomes one with our body, and the harmony is complete; but if muscular force is used in resistance to it nausea will result. I need only to insert "ship" in place of swing, and you have the whole matter open before your mind.

The most obvious and demonstrative derangement to the body occurring in sea-sickness makes its appearance in the frontal region of the body, including the thorax and abdomen. When the vessel rises the muscles

of this region pull in resistance downward; when the vessel sinks to the trough of the sea they pull upward, thus producing a continuous churn-like motion. This has the same effect upon the contractile walls of the stomach as if an emetic was acting therein, while at the same time the movements act with great efficiency upon all the fluids contained within the vessels of the body. The involuntary system does not wholly escape this widespread influence, as we have the diaphragm somewhat involved, which gives its notice in the sensation of suffocation. The blood is irregularly distributed, some organs becoming surcharged, while others are defrauded, and a whole host of symptoms arise, more or less obscure, but none the less perplexing, but comparatively overlooked because less obtrusive than others which have the ability to make their troubles known in a very disagreeable manner. For instance, the stomach, which has had the very unenviable credit of being the seat of the difficulty, and

has had to do penance for this suspicion, in getting rid of horrid mixtures placed there to cure the suspicion. It is pretty nearly the same with the innocent nerves, or some special groups of them. These have had to undergo the torture of paralyzation or drunkenness for deeds which they were in nowise guilty.

The cause herein made apparent does of itself suggest its own remedy. Tension or resistance being plainly the cause producing all the complications, we have at once the true antidote in relaxation or non-resistance. It is the old, old story, ever being repeated, "cease to do evil and learn to do well." If this is thoroughly attended to sea-sickness will be impossible.

If by any chance you become careless, and through neglect of practice the muscles are not properly trained, and sea-sickness steals upon you almost unobserved, you must stand up and relax your muscles until your feet seem to you like lumps of lead. This will restore conformity to gravity. Then walk

about as best you can with your clumps of feet, which of themselves will compel you to assume a loose, swaying motion. By this exercise, unity of force will be recalled under the correlative principle, and you will find yourself master again.

If your mind has failed to comprehend perfectly the full importance of its charge to hold the body in relaxation during slumber, and you find yourself awakened with nausea, you may be certain that your body has been resisting motion while you were in sleep. You must then relax your muscles to the utmost, and hold your body clearly away from contact with the woodwork of your berth. This will bring you into agreement with gravity, as you will then find that your body is lying very close to the bed, and will appear to you very heavy. If you desire to know the immense difference in apparent weight between a body in tension or relaxation, only try the experiment of lifting a body from the floor in tension and in relaxation. That will

convince you of what seems to be a foolish vagary, and will cause it to become a conscious fact. The exercise which is to recall your muscles to the orderly unity may be performed by sharply clinching your fists and relaxing them in alternation.

A careful investigation of the facts herein presented, and treated by your mind in its own independence, together with experiments upon your own person as you have the favorable opportunity, cannot fail to impart that confidence of belief which will wholly banish anxiety as to the effect of sea-going, while it is still in contemplation; and will secure the undisturbed rule of your mind over your body while on the ocean, whether in storm or calm.

It is an ancient axiom that the human body is a world in miniature, — a counterparted universe, embracing all its elements, and subject to the same laws. The system we have been considering furnishes a striking illustration of this as being a matter of fact. The power

of gravitation forms the basis of order and stability for the universe; it also performs the same office for the human body. We have been accustomed to think of sea-sickness as the result of some specific or peculiar derangement of one, or, at most, a few organs of the system, as, for instance, the stomach or some single system of nerves, or some group of muscles, whereas we find that the whole universe of the body is thrown into complete chaos or disorder by our voluntary disregard of the laws to which it is subject.

PROOF.

"To the law and the testimony."

III.

PROOFS OF THEORY DRAWN FROM OBSERVATION.

If the foregoing *rationale* of sea-sickness is true, it must apply to the various conditions of all persons who go down to the sea in ships. These consist of two classes, — the sailor, and the traveller.

We will first consider the sailor. His business lies on the sea, and he finds no hinderance in his labors from the evils which afflict the landsman on its ever-moving surface.

From what cause, or whence comes his immunity? We must accord to him the same physical organization which is the natural

heritage of our race; yet he appears to hold a charmed life. It is not explained by examining his food, clothing, literature, or organism, for they do not essentially differ from the landsman. He has a style and action of his own. How does this happen? He was born in the rural district of northern Vermont, on the hills of New England, and shared his boyhood with his brothers and playmates, who still linger around the old home, and are similar in all respects to other landsmen. He has left his home in the highlands, and taken his position upon the sea, at twelve years of age, and has followed this vocation for twenty years. He now stands before us a marked character. In speech, in walk, in every motion, he seems as if tied together loosely with strings. The articulations of his body seem to the casual observer to take him to a new order. He has a brother by his side who has not been on the sea at all. These brothers are now so widely different that an Agassiz would almost class

them separately. And yet, if we examine closely, we find only a difference in education; and this not from books or system, or even study in which the mind was the chief factor. It has come to him from the exigencies of his vocation. His motions have been compelled by the ocean, his voice by cultivation in competition with the "sounding sea" and the boisterous winds. He is educated for the sea, and he tenderly loves it as his home. All things he has found useful there he dearly prizes. He even exaggerates their value in very pride. They are viewed by him as accomplishments, and he displays them on the shore; and they are never left behind by him wherever he goes. They do seem odd to the landsman, but they are an art. It is according to strict science. Divested of its pride and exaggeration, it is the necessity for the ocean. It is what you have been told in part II. of this work. It is predominant relaxation formed into a perfect habit. The loose articulation of the sailor's body is due

solely to his habit of using his muscles in relaxation. It is his pride and love which has superadded all the oddities which so mark and, as is said, mar the man's appearance when he becomes a sailor. All this is needless, as we can have all the sailor possesses without such outer action. It is this habit which enables the sailor to perform his duties on every part of the ship, aloft or below, in storm or calm. It is the only thing which can enable any one, whether sailor or landsman, to adapt his body to the changing and unsteady ocean surface.

The sailor has really been a walking schoolmaster since time began to teach men the true requirements of the ocean; but men with eyes have seen it not. It has been chiefly from this school I have received my education and my degree. In the long course of my instruction I have been mulcted in large sums as tuition, and still larger sums in fines and penalties, which have been faithfully paid in the coin of sea-sickness in all its phases.

It was while lying snug and close in the corner beside the scupper-holes, and about as near dead as alive, that thought became excited by seeing three sailors upon a yard at least forty feet from the deck, their feet resting upon a loose rope running along just below the yard, — and it was against this yard their bodies leaned. They were indifferent to my torture. They appeared happy, — they talked and laughed. One was mending a rent in a sail with a needle; one was tying and retying some ropes; one in fixing some chafing arrangement; and all this time they were swaying through the air by the roll of the ship, not less than seventy-five feet, and in constant motion. They did not notice it. They were as much at home there, to all appearance, as if on deck, while I was cribbed, and crowded into this dirty corner in order to hold myself together at all. Here is something truly worthy of envy, and I took a good dose, and it revived me. It stimulated thought, and musing over my

wrongs, it flashed upon me that those sailors have a method which I need and which I must have. But there 's the rub; how am I to get it? As for science, that was far from me then. Gravity, relaxation, non-resistance stood in my mind about similar to some Papuan dialect, so far as this difficulty was concerned.

At length imitation came to my rescue. I next attempted to ascertain if this peculiar accomplishment of the sailor was an art coming within the scope of my powers to master by simple imitation. This formed the woof of many an hour of brain labor. At length the opportunity came, upon a wet, boisterous night at sea, to try the experiment. Sea-sickness was already looming up before me as inevitable, unless some friendly power should come to my rescue. In fear of the ever-present ridicule attendant upon any appearance of sea-sickness among passengers, I slipped, unobserved, into a dark passageway of the steamer, and there began my rehearsal of the

motions of the sailor. I had a good conception of the part, and my swaying body would, no doubt, have created fair applause if on the stage. I had no sooner come fairly to the true inwardness of the character I was personating than, lo! my internal organs ceased their riot, and sea-sickness disappeared.

I was surprised. I could not at once realize the situation. I doubted my own senses. I had desired just such a thing, but I placed no real hope in any such result. I walked and turned and moved about, but not a sign of my late trouble appeared. Calm took the place of excitement, and thought assumed its work. I changed my motions to my usual gait, and only a few moments elapsed before ominous notice reached me of trouble in progress, not to be mistaken or unheeded. Again and again I repeated these changes with like results.

From that time (now many years ago) to the present the sea has had no power over me to cause me to be sick, during my waking

hours, unless at the command of my mind for the sake of experiment and confirmation.

My experience by day after this was all that I could desire. I very soon found that the sailor exaggerated his motions, and that I could bring the desired result by no special or obtrusive action. But I still had trouble to some extent in my berth. Nausea would come upon me and I would be awakened by it. For a time I remedied this by rising and walking about with my new-found sailor-legs. At length I noticed that when I was awakened by nausea my body would be found pressing hard against the woodwork of the berth. I fancied (but I did not then know) that this had something to do with my nausea. I arranged my bed-clothing so that I could not roll against the sides or ends of my berth, and I found it made a difference favorable to my comfort. It was at this point that I obtained my first clew to the cause of sea-sickness; still at the time I was unconscious of such a fact. I never wholly became

free from nausea during sleep until I had followed out the clew, and the principles of resistance and non-resistance, or tension and relaxation, become the applied science of my ocean life and motion,— since I belong by constitution to the class of persons peculiarly liable to continued sea-sickness from beginning to the end of my travel upon the water.

Encouraged by this measure of success, I continued my investigations with renewed diligence, not confining my observations to the water, but directing my thoughts to the land as well.

Facts unfolded themselves to me on every hand, that muscular resistance was a force which, unless narrowly watched, could occasion our bodies serious inconvenience and trouble, and that knowledge concerning it was essential to have in aid of our comfort. For instance, I noticed that nausea is often occasioned by the motion of stage coaches and steam-cars and swings, and numerous other conditions, and all of them have their

rise in muscular resistance, the same as sea-sickness, and in like manner may be made to cease.

In many directions I hunted this ground over, and much game was bagged, which, if described, would fill a chapter curious but unnecessary here, but which fortified my theory.

When we turn from the sailor to the host of people who make only a chance acquaintance with the sea, we find so great a difference in their manner of accepting its conditions as practically to divide them into two classes: those who are always free from sea-sickness, and those who invariably suffer from it.

The first of these classes constitutes about ten per cent. of the whole number. If we observe them closely, we shall see that they are easy in disposition, quiet in temperament, and at once adapt themselves to the motions of the ship. Their motions are slow and rounded.

The noise of the machinery, the work of the ship, the hammering of the waves, make no impression on them. They sit and read, or move about and converse, with perfect indifference to the change in their surroundings. In walking we find that they instinctively place their feet wider apart than when on land; and, if they come near any fixed object, they do not catch at it to steady themselves.

When they sit down it is not with desperate energy, but as if sinking to a place of rest. In short, all their motions are very easy and moderate, and they conform themselves to the general laws of non-resistance applicable to the ocean. From this class we may learn the same lesson taught by the sailor, since the comfort attained arises from unconscious harmony with the ocean motions. They yield naturally to the power which imposes new and strange conditions upon them; and by relaxation of muscles become non-resistant, and thus safe from sea-sickness.

Probably about twenty-five per cent. of the remaining ninety per cent. of ocean travellers suffer comparatively little. They all have the incipient stages, sometimes lasting for thirty or more hours, and lose their appetite for a time before they yield to the government of non-resistance. It is interesting to watch in this class of passengers the changes which come over their motions in passing from resistance to non-resistance, reminding one of a dissolving view. The discomforts of the first few hours gradually subside; little by little they take on the movement of the ship, and sway as it sways. Precisely in the degree in which they accomplish this, comfort is secured.

Others from the ninety per cent. succumb entirely at the commencement of the voyage; but, becoming in part non-resistant, are rewarded by freedom from illness in fine weather, although a storm renews their sufferings. At least ten per cent. of those who seek the sea for health, business, or pleasure

suffer much from the moment of embarkation to that of landing. Even the sight of the water from the wharf gives them a foretaste of future misery. They are painfully sensitive to trifles, to which the mass of people are indifferent. The want of harmony in sounds, and daintiness in objects, rasps and frets. Their motions are angular, their steps uncertain; they grasp convulsively at fixed objects, as they move about. Their whole effort is towards resistance, and they suffer a most grievous and dangerous penalty.

Both the sailor and the traveller confirm the truth of the theory advanced, — that relaxation of the muscles is the perfect and only prevention of sea-sickness, and the only remedy when it already exists.

That this is so, may be made still more plain by the following considerations: —

There are three factors to be taken into account in solving the problem of sea-sickness, — gravitation, the ocean, and the human body. The first two are unchangeable and irresisti-

ble; but the human body has wonderful powers of adaptation to the influences which are brought to bear upon it.

When these three factors are brought into close relationship, and antagonism arises between them, the human body, being the only one capable of change, must adjust itself to the other powers to secure harmony. We have seen the method by which it may be be done through the intelligent use of man's bodily powers. Every sea-going vessel, with its burden of passengers and crew, illustrates all the phases of sea-sickness, or of exemption from its sufferings, and shows the reasons for both conditions.

The reader may thus easily assure himself, both by his own experience and that of those around him, that the statements I have made are true.

He will also find occasion to wonder that the thread of ignorance which has held the sea-traveller in thraldom for ages is so slender, and may be parted so easily.

"Our remedies oft in ourselves do lie,
Which we ascribe to heaven."

IV.

RELAXATION OF THE MUSCULAR SYSTEM CONSIDERED IN ITS GENERAL USES.

A THOROUGH understanding of the principles involved in relaxation of the muscular structure is of immense importance to all who seek relief from the exhaustion occasioned by an overtasked body or brain. They apply to all the methods by which entire change in such cases are usually sought.

The perfect equestrian can spend day and night in the saddle. He obtains the exhilaration of swift movement with so little fatigue as to have upon the system the effect of rest. To accomplish this, however, he

must yield so absolutely to the movement of his horse as to justify the ancient fable of the centaur.

In carriage-driving it is the same. Ease is only obtained by so perfectly accepting the motions of the vehicle, as to become one with it. Even the friendly rocking-chair does not give its votaries the full measure of delight unless the occupant is obedient to this law.

Precisely similar in its demand is the ocean travel ordered by the physician, in a large class of disorders; and if with the prescription he would give the necessary instruction respecting the method to be adopted in carrying it out, he would be rewarded with almost invariable success. As it is, the time and money expended often afford very inadequate results, — sometimes are lost in failure, — and again prove worse than useless. Only a small percentage of ocean health-seekers are improved to the full measure of expectations.

Since sea-voyages are recommended by skilful physicians, after making a careful diagnosis of the patient's condition, it has been a mystery that such varied effects should have resulted, starting, as they do, under almost identical conditions. Our theory furnishes an explanation.

When a physician recommends a sea-voyage to his patient, he desires for him such a change in all the conditions of his life as shall have the effect of absolute repose. He takes into account freedom from the daily friction, from whatever cause it may have come; an unaccustomed climate and diet; a succession of new objects for the eye; of new sounds for the ear; of new interests for the mind. It would appear as if these must be all-powerful; yet they are far from proving so.

A single enemy often neutralizes their effects, and makes the physical discomforts of the passage more than a match for their salutary influence.

The application of our theory enables us to perceive why some persons who try the ocean for recuperation are immensely benefited, while others are not helped, and still others are absolutely injured.

The explanation lies in the various degrees in which the different classes are affected by sea-sickness. Such as yield easily to the ship's motions do so by relaxation; and this affords perfect rest, and the power to appropriate the healing influences offered them. The second class, being unable to do this, can obtain no rest, and, therefore, no relief. The third class are really injured, because they do not accept the conditions, but maintain a steady fight on the ocean, and become exhausted by the conflict, and return to the land worse than when they left it.

I trust the reader will not fail to see, that this principle of relaxation of the muscular system has a prominent place in the common occupations of life. It applies not alone to rest, but also to activity. It underlies

achievement in every department, when a true and steady hand, or an accurate brain is required.

No man can become certain of hitting his mark with firearms, except he uses his muscles in relaxation. The most delicate lines of the engraver are alone possible by this use. The most perfect success of the surgeon in his exquisite tasks, is assured in the same way. The brain works more expeditiously and felicitously under this rule of relaxation.

As a remedial agent it affords relief from derangements which baffle the physician's skill, and render the patient miserable.

Undoubtedly, we make sad errors in the use of tension, under the mistaken idea that superabundant life is superabundant health to the body.

Probably, in eight cases out of ten, excessive use of tension is the true mechanical cause of insanity.

If we were not compelled by sleep to cease the use of tension, as the commander of our

body, we should all become insane. What we commonly characterize as a level head, means much more than a vulgarism. It is one who holds his body in equilibrium as to tension and relaxation. It holds in the expression a delicate truth. Please look upon a healthy body in slumber, and see the long, slow, and steady respiration. This is but an eloquent tribute to relaxation as the commander which induces this pleasing state upon us.

It does not detract from the dignity of our bodies to call them machines or engines, which they so perfectly similate. Life is the motive power, tension the throttle-valve. The nerves are the steam-pipes leading to the cylinder. The muscles are the machinery of motion. The supply of life is unlimited. We have the control of the throttle-valve. We may run at twenty or eighty miles an hour. The latter rate of speed brings momentary danger and chances that the engine will jump the track, and then comes a crash, a wreck! In our bodies this is called in-

sanity. On the railroad we call it an accident. It should be called neither, as it should not occur at all.

Not the least among the uses of the ocean is its office of acting as nature's own alembic in rectifying the air of our globe, — the vast space which may seem to the thoughtless as a dreary waste and loss, and of no use. But these apparently silent solitudes are far from being in idleness in the world's great economy. The vital aliment which sustains life requires just these conditions. It is there where the essential element for man's very existence on this planet is made pure, and free from the contamination, that has become amalgamated with it, while passing over the land. On the ocean, decay is not contributing elements of pollution. Offensive odors, so plentiful in and around our large cities, do not there exist. Thus it is that the ocean becomes a healing fountain of living waters, suited for the health-wrecked landsman, where he may repair his damages

with some degree of hope. The supply of this health-giving pabulum is boundless and free upon the ocean, but not elsewhere. Unlimited wealth is powerless to command equal conditions upon the land. The element of danger which formerly existed is no more to be feared.

The frail human plants which abide in the greenhouse temperature, and vitiated air of their gilded palaces in the great cities, are but poorly fitted as the Adams and Eves of a continuous, progressive race. They perhaps better simulate blossoms cut in alabaster. Yet these may hope, with good reason, that contact with the ocean may bring the ruddy glow of health, and command vigor, vivacity, and a richer endowment of physical life. There is no lack or stint in the supply. The physician is perfectly conscious of all this. He has vainly desired to make it available to his fading patients; but the lion of sea-sickness has ever stood in the way, and quenched his generous aspirations.

In attempting to investigate the cause of sea-sickness, I presently learned the importance of relaxation as one of the factors, but before I could make use of it intelligently I was obliged to ascertain its nature, power, and effect. My field for this examination was necessarily my own experience. I found that when I was tired, oppressed, and nervous, sleep could not be coaxed to my relief for hours. My mind, in spite of my will, would work on with the speed of lightning. It would repeat the events of the day with painful detail, or the books I had been reading with verbal accuracy, or the trains of thought with which I had been occupied in an unbroken and endless series. But when I commenced my experiments with muscular relaxation this riot in my mind at once ceased, and all became calm and restful. I could fall asleep almost at my will.

Nor is this control of the muscles through the ascendancy of the mind difficult of attainment. On the contrary, it is quickly and

easily achieved, nothing being needed but a clear perception of the process. By it, when used on shipboard, perfect rest may be obtained by all who desire it, and days of health-promoting enjoyment, may be followed by refreshing slumbers, sweet in itself, and efficacious in its preparation for joys and duties to come.

These do but scotch the snake,
They do not kill it."

V.

HINTS TO BEGINNERS IN OCEAN TRAVEL.

If the system I have endeavored to explain has been fully mastered in practice as well as theory, no nausea will be felt by the most delicate ocean traveller.

If, however, in consequence of an idea that a knowledge of its principles only is sufficient until the moment of need, or from a lack of belief in its efficacy, or the pressure of many duties, it has been postponed, and but imperfectly understood and accepted, great care will be required to ward off an attack of sea-sickness until time shall have been gained in which to make up the deficiency.

Except relaxation of the muscular system, nothing is so productive of good as ease of body and tranquillity of mind. To secure this, business arrangements should be completed and banished from the mind as subjects for care or as a disturbing agency.

When going on shipboard, and for a time previous, no change in diet should be made as to quality or quantity. It is a mistake to alter or much interfere with any habit we have, be they good or bad, on the eve of a voyage, as it disquiets the body and unfits it for new conditions.

desirable to go on board early enough nge the state-room, which should have been carefully chosen, so as to secure the most quiet and the least motion; also to learn all the ship's peculiarities, and arrangements which can affect the comfort of the voyage, before the vessel leaves the wharf. Extra bedding should also be secured.

The hurry of last moments, the worry over articles left behind or mislaid, the regrets of

leave-taking, the despondent feeling of helplessness, caused by the unaccustomed and strange surroundings, and rendered more acute by a too active imagination picturing future inconveniences and dangers. Everything, indeed, which disturbs the mind invites illness and makes it more intense. On land, all this results in headache, often almost unendurable. The sea does not furnish exemption from the penalty imposed for thus overstraining the system, but it is quite liable to add to it nausea besides.

Warm clothing, with extra wraps for deck exercise, are imperative. With them even an invalid can enjoy the fresh air and a touch of the salt spray.

A simple diet promotes digestion, and is conducive to sleep on land; it is still more so on the sea. Rich sauces and gravies, puddings heavy with fruit, pastries flaky with lard, too great variety of dishes, and an unreasonable amount consumed, are fatal to comfort anywhere.

Wisdom dictates a degree of self-denial at all times, and makes speedy returns for it in augmented comfort; especially is this true in a sea-voyage.

At night the bed-clothes are to be so arranged and tucked in, that the body will not be inclined to roll and rest against the woodwork fixtures, sides or ends of the berth, and thus acquire a basis for the body to make resistance during its slumber.

Before rising in the morning some coarse bread, or cakes made from graham or oat-meal which will require vigor in mastication, together with a little milk or tea, taken slowly, will be appreciated by the stomach.

Rise leisurely — first raise the head, resting it on the hand and elbow. If your head feels at all confused you are to remain just as you are a little while, and this sensation will disappear; then follow up the movement in a quiet manner. Do not by any means make use of any violent or even quick motions in

making your toilet, as such might cause serious complications and trouble.

These directions, intended only for beginners in ocean travel, may appear trivial; but nothing is really so which adds to, or detracts from one's powers for usefulness or enjoyment. They are here given in the hope that by their successful observance strength will be obtained to put in practice the principles presented in this work. These directions alone must, in the nature of things, be inadequate to furnish you the security you seek. There you may find by diligent study of other parts of this work, where will appear abundant reasons why this is so, in the broad and undeniable fact, that the ocean is an element which is under the strict dominion and imperious rule of non-resistance; and it will be folly for any one to expect immunity from suffering, except through obedience of body and mind to its requirements.

"How use doth breed a habit in a man."

VI.

HABIT ILLUSTRATED.

In the gradual development of mind and body, which changes the child into the man, and decides his character and capacity, habit is so important an element that it is entitled to some consideration so far as it affects our subject.

Essentially, habit is the method of repetition by which a uniform rule of action, either mental or physical, is established. An action which may be at first irksome or even painful, will, if persisted in, at length become involuntary.

A habit once formed becomes the property of the mind; and though not in constant use

is never quite lost, but may be recalled when needed. The aggregate of such habits forms the sum of the man's effective capacity for the performance of his various and manifold duties in life. They are his drilled and efficient troops which are his reliance for immediate engagement.

A simple fact will illustrate this point. Suppose that in the study of music I have practised fifty separate tunes until I have mastered their performance, and committed them to memory. As I have acquired these airs I have dismissed them, one by one, from the present attention of my mind, and the power to perform them has become a passive habit. If now, I go to the piano and desire to play "Sweet Home," the notes of that air alone, of all the fifty which I have learned, recur to my mind, and my fingers readily strike the appropriate keys. The passive habit is thus called into activity, and if it were formed originally under diligent practice, the effort now to reproduce it, even after

many years of passivity, is comparatively easy. It is the same with muscular operations of all kinds, and is substantially the ruling element in our life-work, whatever that may be. If the habit be but indifferently formed by clumsy or heedless practice, and it falls into disuse, it may be recalled with more or less difficulty. In this respect, it is similar to any other education, — as indeed, it is nothing but education, — and, therefore, subject to like rules for acquisition.

In the formation of a habit, the mind must first comprehend what is required to be done, and then the muscles must be trained to carry out its directions. In the illustration above, the notes of "Sweet Home" were easily read and understood; but in reducing them to practice, my untrained muscles, like those of a child on first essaying to walk, refuse to obey the mind's directions. It was a tedious and difficult task, which could only be accomplished by persistent effort. Little by little the muscles learned their

duty under the careful guidance of the mind, until the keys were touched with skill, and the arduous task was changed to a pleasure.

It is upon the power of habit to control the muscular action of the body that we must place our reliance to effect the prevention of sea-sickness. This is caused, as stated elsewhere in this work, by the use of land habits of motion upon the water. We have also seen that those persons who are constantly upon the ocean form a habit, which is proper there and which saves them from suffering; while those who are but partially accustomed to the sea are usually sick from a lack of the proper habits.

It would be very easy to learn the right method if the actions to be performed were altogether new. But, unfortunately, the task required is to do the same things which have been done on the land in a different way; or, in other words, change the habit of a lifetime. This statement seems to imply a serious difficulty, and would almost appear

hopeless. Yet it is really simple, though requiring at first diligent attention. The motions for the land and sea are precisely the same, except that they are made by a different application of the same power, the muscles being used in relaxation instead of tension. If we were compelled to watch each separate motion in order to cause it to be non-resistant, the labor would be very great. But we have only to comprehend mentally the general principle of loose, swaying motions, which are the product of relaxation, when the whole government of our bodies will become changed for the sea, and we can soon compel our muscles to make this their habit of action. I do not, in laying down this rule, ignore the fact that all motion of the body is the product of action and reaction of tension and relaxation; but preponderance may be given to the one or the other of these opposites at the option of the mind. If tension be the desire, the mind imposes the impulse upon the body, and the whole body at

once becomes firm and elastic, and the feet will appear to rest but lightly upon the floor. On the other hand, if relaxation be the need, the impulse is given, and all inclines to a pliant and placid state of body. The feet now feel exceedingly heavy. They seem almost to stick to the floor, and we are obliged to sway our bodies from side to side, that the feet may move forward. If we did not sway our bodies, we could not move forward except by dragging our feet along the floor, when we make the process up to the maximum of relaxation.

We thus see that by the practice of these two forms of motion until they yield due obedience to orders, we may fit ourselves in the privacy of our homes to travel with comfort upon the ocean; and when habit is once enlisted in behalf of our new departure, it will be as great an assistance as it was a hinderance while opposed to us. When by practice we can easily give preponderance to relaxation, all our motions will come into

harmony with the requirements of the ocean, and habit will seal them as its own, by making them involuntary. Even if comparatively uninstructed as to the general principles of the muscular action, we need have no confusion or fear, as we have always at hand an unfailing test as to the quality of our motions in the lightness or heaviness of our feet. This will be a sure guide for correct practice, or actual service.

It may appear absurd to some of my readers to say that one can make his feet heavy or light at his pleasure. They may ask, is not the sum of man's avoirdupois all centred in his feet, if he be standing? It is so; but there may be effects produced by the agency of gravity which will so modify this fact as to cause it to appear entirely the opposite. If I place the body of my carriage directly upon the axle, and ride in it over rough roads, the jar will be intolerable; but if I place a spring between the axle and the body, I am conveyed in comfort. I have

not altered the avoirdupois of the vehicle; I have made no change in gravity, but I have introduced a mechanical power which has subdivided the shocks into minute atoms, each one being so small that I do not heed it; and I say in common phrase that the shocks are removed by the spring, when in fact it is only subdivided, but still remaining. So in speaking of light or heavy feet, I do not mean that the weight is increased or diminished, but that the method of the pressure is utterly changed by the manner of manipulation of the muscular power, and the effect is as obvious as that of the carriage.

"Sleep, oh, gentle sleep,
Nature's soft nurse, how have I frighted thee,
That thou no more wilt weigh my eyelids down,
And steep my senses in forgetfulness."

VII.

A WORD OF CAUTION.

For the system presented in the foregoing pages I am in nowise responsible. I have only pointed out natural laws, and made known their application; I have invented nothing. It will, doubtless, appear extremely simple, and such indeed is it in theory. The reader, however, will commit a grave, if not a fatal error, if he believes himself master of it without the practice necessary to render it available to him.

I have spoken of practice as an element in connection with this system of supreme importance. Practice in this, as in all action,

is the true parent of habit, and habit is the mode by which the body attains *perfect motions*. By this method the body becomes a master-workman in whatever it does. Any new thing which requires an exercise of muscular power, needs in some degree to go through the performance of learning a trade. A Lord Chesterfield, or a Louis XIV., did not become the masters of bodily motion except by diligent and persistent practice in all the trivial details. All delicate trades requiring skill must come to perfection by the same universal rule. Very few sailors were born such. They have come to their present perfection through practice alone, not by the aid of mind, but the same as a child learns his motions. This admits of radical change in the method of learning this trade, which is that the mind shall take charge of the body in this respect, and cause it to do its bidding, and thus by the use of intelligent direction make an open and direct path to the end we seek, — which is that of using our

muscles the same as the accomplished sailor does. This will be seen, by what has been said in previous pages, to be practical and easily within the compass of every one's powers. Of course, all will not learn with equal facility. Any physician who has studied the human body thoroughly will be able at once to cause his muscles to obey him, and will become a natural sailor at will. But his facility for this came through the practice of his mind upon the nature and powers of his muscular organization.

The subject we are considering involves the principles of muscular administration for two separate and distinct conditions. One is for the land, — and this is conducted upon the principle of force, or coercion, or still better by resistance, — the other is for the ocean, and is based upon the opposite principle from that of the land, which is non-resistance.

That for the land we all understand from our childhood; that for the ocean has been in use for all past time, but its principles

have been practically unknown among men, and is so to this day.

The executive principle alone permissible upon the ocean is relaxation of the muscular powers; or, in other words, non-resistance must become the natural state of the body during its ocean sojourn.

This is to be brought about by the use of the same muscles which have been educated upon the land to the habits of resistance.

It will now be seen that the apparent simplicity, which seemed so complacent, has given place to a problem which requires careful attention.

Our muscles are required to learn a new trade. They must do their work in an unaccustomed manner, but they are apt scholars. If the mind, which is their natural tutor, sees clearly what is required, this problem will be quickly solved. It will set the muscles to their lesson of practice, and will watch them and hear recitations with the most assiduous care; and it will not allow them to graduate

until they can pass its strictest ordeal of examination, to the end that the mind may be perfectly satisfied that it can rely upon them alone in any emergency.

This accomplished, the man is fitted for the wildest fury of any ocean; nor is he absolutely secure until this is done.

The use of this repeated exercise is, first, that the muscles be made to do a new thing in an easy and natural way, and, secondly, that the mind may become convinced of their ability to obey its orders, and thus freed from all doubts or care concerning them. The value of practice consists greatly in its being an antidote to fear or any of its numerous family, all of which have much to do with the comfort and health of the body while upon the ocean.

A familiar illustration will show something of the method by which fear acts upon the body. Suppose a plank raised six inches above the floor; I can walk or run across it with the same ease as if it were on the floor.

Place it now fifteen feet above the floor, and I cannot now cross without positive danger. Fear will demoralize my muscles and render them unreliable, and they become useless to me. But if the plank is raised two feet, and I cross it slowly and quietly, until I become accustomed to that height, and then the plank is raised four feet and I repeat the process, it may be thus raised to a great height without causing dizziness in crossing it.

Practice assures the mind and renders it confident by removing fear from it.

If at any time during my performance upon the plank it had shown signs of weakness, or inability to convey me safely, my mind would have exercised caution, and this might have taken the radical form, which is fear. In the form of caution I should have stopped and examined the plank and its foundations, and seen that all was secure. In the form of fear, (which is only intensified caution,) I should have become anxious, and probably dizzy, and perhaps have fallen. It is the prov-

ince of the mind to guard the body from accident and harm; and the whole family of fear are engaged in this particular duty. The sane mind does not allow its body to visit doubtful positions without providing some member from the family of fear as its constant attendant while engaged in such enterprise. Fears are qualities and conclusions of the mind ordained for the protection of the body, and therefore strictly legitimate. They are always on duty in some degree during wakefulness, and, under certain conditions, also in sleep.

Ordinarily, men can hardly be said to sleep perfectly. That implies entire relaxation of the voluntary muscles. Usually there is left on the mind some form of responsibility when passing into slumber; this requires a basis in the nerves and muscles, and it signifies continued care and direction over them by the mind. If this charge is unimportant, sleep is comparatively profound. If the charges are many and important, sleep will

become less and less perfect as their numbers increase, until it is rendered unrefreshing.

We are all, more or less, acquainted with this fact: for instance, if we charge our mind with the necessity for awaking at four A.M. for an early train, when our usual hour is seven A.M., we shall usually find that our mind has proved an excellent time-keeper during our slumber. But this has only been accomplished at a certain expense to our nervous and muscular system. If we form such style of awaking into a regular habit, there will be no apparent loss of power to continue such habit, which will be done without any conscious charge upon the mind. Thus do we form automatic habits.

The more nearly we make the relaxed condition of our bodies habitual, during our wakefulness upon the ocean, the more perfectly will our mind be able to take care of our bodies in sleep; and the more perfect our sleep is, the more abundant will be the recuperating influence upon our

physical organs, and general health in all respects.

No one should be in the least discouraged if he fail in his first attempt in the use of this system. Let such one merely redouble his diligence in the practice of sea-motions, and they will become as fixed as the old.

Possibly some of my readers may think themselves unable to practise this relaxation of their muscles, but the absurdity of this idea may be easily shown. We may see upon any vessel men who are passing from sea-sickness to a state of comfort. We observe that this is done by changing muscular tension to relaxation. They do this unconsciously, having never been instructed in the matter; yet the process is perfectly accomplished. Can you plead inability to perform consciously, and with the knowledge of its necessity, that which is done unconsciously by those who are unacquainted with this science?

A single paragraph on a previous page speaks of medicine as a disturbing power,

which has no place in sea-sickness, except to injure. I would not change that direction in the least. I am quite aware of the strong desire of some people to take much medicine, whether there be reason or no reason. If there be any good reason for using it I have not the least objection in general disease; but in sea-sickness there is no disease. The victim's organs are healthy. No compounds from drugs *can* do other than injure him! The sea-sick man needs knowledge; that alone is his requirement. There are recommendations extant to use drugs which stupefy the body. This is insane treatment. The effect of such medicines is to deprive the patient of a portion of his life to the extent of barely saving *some* life at the end of the voyage. When such patient lands he may bid farewell to comfort, as his body will be but a jingling mass of discords.

Relaxation has the pleasing power to reduce superabundant inflow of life to the fullest extent desirable, and this works with-

out drugs, and in true accord with the infinite laws which rule in the body. You can make no mistake in this, as it violates no principle in our organism by which we live; but more than this, it is the very source of health and true comfort to the body. If you fail to understand the full import of these instructions, you must call upon your physician. It is his profession to know all these things. He has acquired it by technical and methodical study of the phenomena of the human body. For this service you may well afford to reward him liberally, if you are unable otherwise to understand your duty. The physician has acted honestly by you in this matter in the past. He has had no theory on which he could rely with confidence, and he has said so in all his books. You have known this to be so; the consequence has followed that the physician has had little to do with this grievous difficulty. He will henceforth be able to supply your needs. Sea-sickness must ever remain an inexorable condition

with such as continue in ignorance of their duty. Natural laws will not change.

The physician is the natural storehouse for any information concerning the human body. He knows exactly how to govern his own muscles; he can inform you if the necessity arises. But this understanding you must have, however you may obtain it, or you need not expect immunity from suffering.

As to the discovery of this knowledge, a word upon it may interest you. The single word "imitation," so innocent of any significance at the time, ultimately proved the key to the whole position of sea-sickness. It gave me control, but not the knowledge. This control enabled me to seek out the knowledge by careful study of effects. I could say to sea-sickness, "So far you may come upon me; but if you pass such or such bounds I can check you by the use of the sailor's art." I was thus able to get true reports of the precise doings in my body. Such a thing was wholly impossible without this control. The

victim in ordinary is unable to give correct statements of his sensations. He is *hors de combat*. The disorder is not stationary a moment; it is progressive. The whole feelings are liable to utterly change in a few moments. A large army in actual battle represents the body in a state of sea-sickness better than anything I can name. One group of muscles after another fall out of line, or are made prisoners, so that the mind loses its power of command over them. This control, which imitation of the sailor gave me, enabled me to call a rest in which I could survey the field and calculate.

As I look back over the ground, I am unable to see how sea-sickness could ever have been made clear, unless control was first given, so that the observer could study it from his own sensations. The effects do not point to the cause; that is invisible and intangible, and apart from the body. Sensations do not show it to us. These were facts to be found out. It looks easy enough now, but it was mid-

night then. The simple control did not give me so much as a tallow-dip of light upon the cause of sea-sickness, but it made the ground secure to stand upon, — and only that. The person who by nature is exempt from sea-sickness, could not arrive at true conclusions concerning it by any study within his power. What he would see at one moment would wholly change the next. Sea-sickness has no fixed methods which disclose themselves by uniform symptoms. It does not organize itself to any specific mode of action. Its demonstrations are fickle, changeable, and inconsistent with order.

A modern house is furnished with all articles of *virtu* and elegance, spread out upon mantels and tables, and bestowed in tempting display in its rooms. If we should tip this house half-way over to one side, and then creep into the rooms, we should surely find a scene of disorder. We could form no opinion how that scene would appear if we tipped the house a few feet more. If we

should tip the house over to the opposite angle we should have confusion confounded. But this house, as an illustration of a man's body in sea-sickness, cannot be said to exaggerate that condition. When studying the effects of sea-sickness in the human body one finds all things there to conspire in misleading him. His hopes will be aroused at times almost to a certainty, and the next instant they will be dashed into total darkness. Such are some of the conditions which have met the observer in his search after this *ignis fatuus* of the ages, and have effectually baffled him and delayed this knowledge.

The author has insisted much upon the necessity of such practice as he has described. He is still more anxious to caution the reader against that spirit of unbelief which would close the mind to evidence on this subject. After six thousand years of progress the power of falsehood is still wonderfully strong. It intrenches itself in the mind, and through the will throws up an effectual barrier to the

entrance of knowledge. Men still "love darkness rather than light," to their own discomfort and loss. Ignorance, however, on this, as on all other subjects, is doomed to pass away. Every day some shadow vanishes from the intellect, giving place to the light of truth. A scientific knowledge of the material universe is constantly increasing, and the words of the old Latin poet are being verified: —

"*Happy the man, who studying nature's laws,*
Through known effects, can trace the secret cause."

"Our doubts are traitors,
And make us lose the good we oft might win,
By fearing to attempt."

VIII.

STORM LESSON.

THE empire of mind over matter has been actively asserting itself and extending its domain over new provinces, with remarkable energy for the last hundred years. Each new acquirement smooths the way for further conquest. Some departments of the ocean have been studied with great care and assiduity for long periods of time. Great discoveries have been made as to its physical geography; and, so far as navigation is concerned, the time has at length arrived when the ocean has become one vast highway, as safe to the traveller as an equal distance upon the land.

In earlier periods all good roadways on the land were turnpikes, barred by toll-gates; such obstructions have now mainly disappeared. The toll-gate of sea-sickness has continued to exist on the ocean, but is now to be removed, and a free pathway opened. This is to be accomplished by the conquest of mind over the opposing forces of matter. This must be legitimately done. There must be no attempt to subject the mind to will-power or psychological influence, or any trick of logic, as anything of this kind would be swept away by the first blast of a storm. The purpose of this work is to set forth facts as a foundation for the mind to rest upon, and thus establish the man in the command of his own body, so that there may be no terrors to dread from sea-sickness, in storm or calm, during his ocean sojourn.

I have in general only spoken of ordinary experiences at sea. It is very difficult for the landsman to form any clear idea of what he will meet as he faces a storm for the first

time, yet he should attempt to do so in order that he may not be surprised and overpowered.

The task of describing the wild fury and turmoil of a storm at sea is one to which I am wholly unequal, although the scene is perfectly familiar to me. Words are inadequate to picture the ocean under the power of a fierce wind, with the ship tossing violently on its surface. The land affords no similar scene from which to draw comparisons, although the same omnipotent power is felt in the fires of the volcano, the shock of the earthquake, and the resistless blast of the tornado.

The storm at sea is a wholly new experience to the landsman. Every movement of the ship is strange. Every sound conveys to him a sensation of danger; and it is against this terror that the mind needs to be fortified with knowledge, in order to rise above the terrible din and turmoil into the security of a clear confidence.

We find as the ship enters a storm-circuit on the ocean that everything loose upon the ship assumes wings; hence all movable objects are made fast, or else they will be thrown from side to side with such violence as to destroy them, and unless we are able to assume the limp condition of a bag of meal, our bodies will be treated with no more respect than any other movable. If a plate or tumbler is left upon the table we shall hear it crash against the sides of the room, a mass of fragments. If we rise from a chair which is not secured to the floor we do not find it in its place the next moment, but may seek it at the side of the cabin, minus a leg, perhaps. If we attempt to go on deck, we are forbidden so to do unless a life-line is made fast to our bodies and then fastened to the ship, that we may not be washed overboard. Thus equipped, we go on deck, where all things are firmly lashed. The deck itself is a pool of water. The air is filled with fine salt spray, which penetrates our eyes, causing

them to smart. We are almost overpowered by the strange sounds, which are all new to us. The officers are obliged to give orders through trumpets, which sound discordantly to our ears. The standing rigging of ropes gives forth tones on the æolian principle, but altogether unlike anything of the kind on land. Now it is a sudden shriek dying away into a plaintive wail, to be caught up again with another cry of agony that fairly beggars description. Other noises meet our ears from the ship, indicating the strain on all its structure. We feel the deep shudder which runs through the whole fabric of the vessel as she strikes against the almost vertical walls of a roller wave, pressed forward by the wind until it has become too ponderous and must break. The shock sends a mass of water high in air, and it covers the deck like a vast mantle. Presently we see (if we see at all) a big roller, higher than the bulwarks; and now if the ship is in the right position as to the wave, a great mass of water will slide

from the top of it to the vessel's deck in a solid body like a section from Niagara Falls. We shall realize the value of the life-line, as we have a mighty river on deck, which will roll this and that way until it escapes through some ill-fastened door below, or through the scuppers. The noises on a ship while undergoing the ordeal of a storm are fearful, and to the inexperienced seem pandemoniac. Aside from the sharp whistling of the rigging noted above, we have the most weird and unearthly sound imaginable, — now a crash, anon a groan, a tremor, a stagger, a monster sledge-hammer stroke upon the ship which is felt in every timber, and a settling downward as if the ship were bound straightway to the bottom. Indeed, it is quite impossible to name and characterize the variety in this carnival of strange sights and sounds which are forced upon the senses of the preternaturally observant landsman, and which fill him with dismay.

Without correct knowledge it is not strange that he is overcome, as fear is lurking behind every unexplained sound or movement. He has no intelligent reason for reposing confidence in the stability of the vessel. He does not reflect that storms have always existed, and that the genius and experience of man have so contrived this wonderfully-constructed vessel as to provide against danger from the sources he now contemplates, and have rendered the fabric safe from any real harm. He does not observe that the officers and sailors are calm, and take all this riot as a very commonplace matter. He does not reason that these same officers and sailors have accurate knowledge of the ship and its powers, and that their lives are as sweet to them as his is to himself. He does not note that both the officers and sailors move about at will, and stand on any incline of the deck with equal facility. He does not see that their feet have a peculiar affinity for the floor, somewhat like a fly upon the wall,

as if stuck there at their option. His mind is only open to his own personal concerns, and he is so far under the influence of fear as to keep what little reason or knowledge he may have had in the background, and a paralysis of his powers gradually steals over him.

It must be evident to any one that under the conditions here described, and which will be recognized as only modestly stated by any who are conversant with the ocean, that the only thing in which the sailor and the landsman differ is in the degree of knowledge they possess; both must be physically alike. This study does disclose an anomaly — a curious fact — which is that the sailor is enabled to act upon a truth which he does not comprehend. His motions are scientifically correct, and yet they are produced without the use of his reason. It is this intuitive perception on the part of the sailor of the quality of motion required of him for the ocean, that has enabled him to make use

of it as a highway during all the ages that are past.

It is quite probable that the reader may be confirmed in the commonly-received opinion that some people are born to be sick at sea, that others are not, and that sailors belong to the latter class, or they never would choose that as a vocation. He may deem it impossible that he could ever be freed from the danger of sickness when wind and water combine to do their worst. But this is altogether erroneous; sailors and landsmen suffer alike from the same conditions unless the one is protected by his intuitions, which have become confirmed habits, and in the other by knowledge which will permit him the exercise of his reason, whereby he may intelligently direct his body into the proper motions.

If I have familiarized your mind somewhat with storm life upon the ocean, and shown the fallacious character of some of your fears, my purpose in this part of the work is at-

tained. A few additional words upon fear and its collateral issues, may perform a service for you. This is an element ever at work upon the body. Its effect is to induce upon the muscular system a state of tension, or resistance, and this in conjunction with disobedience to gravity produces sea-sickness. Sea-sickness does not assail the body naturally, except there is fear in the mind as a groundwork. The immunity from sea-sickness enjoyed by the ten per cent. of ocean voyagers who are never sick, is due unquestionably to their exemption from fear. Their bodies thus left in complete self-possession, are sensitive to the delicate action of gravity, which they instinctively obey. This is all unconscious to them. I never found any one of this class of persons who had a notion even why they were not sick like others. It is the same with the sailor.

Fear, at times, acts obscurely, but it is always efficient. I have reason to believe it to be the interior although hidden spring of

sea-sickness. I do not so affirm it, because I am unable to bring obviously to your view all the complex mysteries involved in the proof. It matters not whether we are conscious or unconscious of its presence, its effects upon us will be the same. It and its product are precise equivalents of each other, hence the degrees are correspondent: that is, a frenzy of fear will beget a frenzied resistance, or a rigid tension, and this in turn will beget spasmodic sea-sickness. Fear being (as stated elsewhere) a conclusion of the mind, it can only be removed by the use of reason and knowledge. It is well that this link of fear in the chain of sequences which culminate in sea-sickness should be broken if possible, as it detracts greatly from our comforts; but it is not absolutely essential to be done, since we are able to destroy its product, which is resistance, by the simple use of relaxation. Resistance being also a link in said chain, when that is broken sea-sickness disappears, having no remaining basis,

and leaving the body in true freedom to obey gravity in a normal manner. All this is quite possible and practical even though fear still lingers in the mind.

It has often been said to me, "I wish I could become sea-sick; I believe it would do me so much good." Such words to me, who have been racked by its torments, seem ridiculous; still if any such persons retain this desire they may gratify it by the use of tension, in preponderance. Sea-sickness in this way is as easily secured as cessation from it is by the use of relaxation. I have been able to secure either condition at my option for many years, and I possess no powers which are withheld from you in this matter.

One not susceptible to slight causes for fear will find it difficult to superinduce it upon himself in a degree sufficient to produce tension and consequent sea-sickness; but tension itself is at the instant command of the will.

Sea-sickness has been studied by assuming that effects were causes. This method leads

to an endless labyrinth. The effects embraced under the name of sea-sickness are numerous beyond computation, while the cause is single. When the voluntary muscles are set free from their allegiance to the laws of order proper to the body, — which is the case by disobedience to gravity, a riot ensues in the whole body. The individual members, organs, and vessels involved are far more numerous than the inhabitants of any city. This is what facts compel us to see in the body in sea-sickness. We can realize how futile would be our efforts in stopping such a state of things by acting upon single members. The extent of confusion, and the very contradictory character of evidence attainable from the individual rioters, has enshrouded this subject in profound obscurity for all past time. Nor, indeed, can we see anything but effects, until we rise above this chaos into the higher realms of causes. The method in use for governing this vast host of individuals which compose the human body,

is by tension and relaxation. The effect of tension is to augment force. Relaxation is soothing, and diminishes force. When the body is orderly, these methods form an arrangement similar to a barometer, regulating the supply of life flowing to the voluntary system. Above these, and having the veto over any disorderly proceedings of theirs is gravity, which is clothed with the power to paralyze and reduce to order any riotous demonstrations. This is what is done when tension assumes wrongful preponderance over the body, as is the case upon the ocean, cliff, or lofty building. The evidence of this, and the effect of it, becomes visible in the disturbance we call sea-sickness, or dizziness. The current of life flowing to the involuntary system is but slightly influenced by the mind. But that coming to the voluntary system is largely under the control of the mind. The machinery (as stated above) to regulate this supply is tension and relaxation. These act, so to speak, like gates

admitting life to the nerves. The nerves under violent and prolonged use of tension have the capacity of transporting vastly greater volume of life than the muscles are able calmly to appropriate. This may be continued to the extent of inducing insanity, as violent tension opens wide the gates for the inflow of life. But the more common denouement in case of excessive tension is by reaction, when the whole voluntary system succumbs to a swoon, and then we have complete relaxation. This state of things frequently occurs in spasmodic sea-sickness. The swoon will cause instant cessation of sea-sickness, and we hear no more from it until the patient has recovered from his swoon, and had time to regain the control of his muscles, when he will usually employ tension again, and sea-sickness will recommence immediately. This forms another proof that tension is the cause of sea-sickness, and relaxation is its cure, and therefore under the perfect control of the will.

It is, of course, the radical use of tension which forms the basis of our difficulty. When the body is under no special excitement from fear, pain, or other cause, tension and relaxation act as steady as a clock pendulum, and we are quite unconscious of any preponderance. Still, if we observe with care, we shall see that tension has a small ascendancy over nearly all conditions while upon the land, but in ordinary it is very slight, indeed. This is orderly and promotes health. With those who have attained the perfect habit for the ocean, the case is precisely reversed from that of the land. There, a slight relaxed habit is in the ascendancy, but it is so small as hardly to be noticeable in ordinary or fair weather. But a change in weather will induce an increase of relaxation, until the whole body will become very limp. Beautiful examples of this whole process may be seen among the class of persons who are by nature exempt from sea-sickness. But this class upon the land would

be called lacking in muscular energy. They have no apparent nervous irritability. They do not open the gate of tension unduly, and are justly to be envied so rich a gift. Their exemption, however, has nothing of the patent principle about it. We can perform all that they do, when we understand what that is, as we can control our own actions. It is desirable to divest this subject of mystery. I have suggested nothing in this work but what is common to our daily life as the act of breathing. All can be proved by the sight or sense of any one. It is not necessary to think of a new thing as a mystery when we have the ability in ourselves to prove the truth of it. It is a novelty that a man is fitted in his organism with ballast, which acts in all respects similar to ballast in a ship, — that it may be placed in our feet by our dominant use of relaxation, and in the head, shoulder, and arms by tension, or changed back and forth, or increased and diminished in volume in an instant of time

by the simple impulse of the mind. All this has not been understood, but has always existed, both on land and ocean. It is absolutely essential to man's well-being on the land even, that this peculiar movable ballast should exist in the body. He would, in its absence, be deprived of many useful things now common to his daily life, and he would be forever barred from the ocean. This arrangement, to speak plainly, is an evasion of the force of gravity. It is one of the wheels within a wheel, to be found in the body; but it is not a mystery, as we can experience its whole work readily. If I give tension dominant command in my body, that act, while upon the ocean, does for my body the same thing as if I placed the ballast of a ship upon her hurricane deck. Of course, she would be forced by gravity to turn bottom up. The effect of tension is the same upon my body. It is the effort of gravity acting upon this wrongly-located ballast which causes the commotion in and upon my

body which we call sea-sickness. If I remove tension from its command, and cause it to assume a subordinate position, I shall have relaxation in dominance. That will of itself assume control, and all this commotion and turmoil will cease. This is so, because gravity will be satisfied by this change in the location of ballast, and rest is secured to the body.

If you will carefully ponder these instructions, and habituate yourself to act upon them, the fields in your mind, so fertile in production of wonder, mystery, and fear, will be cleared of this jungle, and all will become light in the sunshine of intelligence. You will be as calm in the wild fury of the tempest as the officers and sailors are, you will draw your comfort from the same fountain as they do; and, as you will be free from the engrossing sense of physical suffering, you will be at liberty to enjoy the unequalled grandeur of the ocean storm.

We have come to the end of our topic, and also to the end of sea-sickness. We may now enjoy the anticipations of our youth, and view with complacency the great mysterious ocean with all its sparkling splendors, and harbor neither fears, dread, nor punishments, since its terms are familiar to us, and we have accepted them, and propose faithfuly to abide their conditions. Freedom, enjoyment, and life-giving influence of the ocean, this greatest portion of our globe, is made over to us in perpetuity. The deed of conveyance is recorded, and will never become void. The title to this possession is unquestionable, as it bears upon it the broad seal of natural law.

The motive which led and sustained this endeavor has been punishment inflicted upon me by sea-sickness. That alone compelled me to study in self-defence,—sea-sickness became an offence unto me. It assumed in my mind the character of a personal enemy, who had wrongfully deprived me of my proper

rights. Those rights are no longer withheld from me. They have become equally your rights, and are for your comfort and enjoyment.

"*And if we do but watch the hour,*
There never yet was human power,
Which could evade if unforgiven
The patient search and vigil long
Of him who treasures up a wrong."

NOTES.

LIFE. — MIND. — NERVES. — MUSCLES. — SLEEP. — CITATIONS.

IX.

NOTE 1. — LIFE.

IN the use of the term Life in this work, I mean that invisible and intangible power which is present in the human body, and which is the source of all motion and operation therein. Science does not yet vouchsafe an explanation of it except from the effects it produces. These declare it to be the source of all power upon and in the plane of matter. Life is believed to be spiritual, the gift of an infinite Creator, boundless in volume, uniform in quality, and free to all things which are so constituted as to be able to make use of it. Its endless variety in

manifestation is due to the combination of matter, through which it acts, and not at all to any change in the quality of life itself. It is the source of force to the animal, plant, and mineral alike. Life flows into man's body, and there a portion is delegated to his control which he may freely use in the production of varying results. Another portion is withheld from man's control, and it acts upon the body independently, and continues its ceaseless work so long as the constituents of the body are maintained in their orderly arrangement and integrity. Upon man's orderly use of this delegated life depends the continuance of harmony to his body and its lengthened permanency.

Note 2. — Mind.

The mind is a spiritual organ, and is connected in a mysterious way with the brain, in which lies its centre of action. By means of its endowment with reason, memory, and

many other faculties, it is able to take cognizance of the internal world of spirit; while, through the bodily organs, it takes in knowledge of the outside world of matter. It is thus fitted to act as the governing intelligence to control and direct the body.

Its province is to act judicially and decisively upon all matters brought before it. It hears evidence, weighs it, and decides according to the light it has, and the faculty of reason. It stands as umpire between the noble and Godlike faculty of reason and the selfish senses of the body. It is a court of last resort for the determination of action.

In this most important and responsible capacity it demands our best care in supplying it with every possible facility for education and knowledge.

Note 3. — Nerves.

The nerves are the only means of communication between the brain and muscles.

They are endowed with dual powers, and are thereby fitted to become the agents by which the mind (which is spiritual) is enabled to act upon the world of matter.

The nerve substance is a modified form of brain matter. The peculiar plexiform arrangement and relays for special service are most wonderful adaptations of means to ends.

The nerves, though material in substance, are vehicles to carry the forces of life and intelligence from the brain, or mind, to all parts of the body; and also transmit directions for their use. Their analogue is to be seen in the telegraph, in many respects, and the mind makes such use of them in its governmental care over the body.

Life cannot operate in the body where there are no nerves to convey it. Sever the nerves which pass to a leg, and although all else in that limb still remains intact it must die. Hence the nerves are protected from injury by the arrangement of their location.

Note 4. — Muscles.

The muscles are purely material, and are, perhaps, often considered as plebeian in comparison with the nerves. This is a mistake. Nothing in the realm of matter is more noble or excellent in quality or endowment. They are the first demonstrators of life to the eye of sense. They receive life and convert it into force; and employ that upon the plane of matter. Their structure and arrangement mechanically, and viewed superficially, seem an inexplicable tangle of crossing and interlacing fibres without order; a complete chaos and confusion. But seen by the trained eye, they are order itself, and far surpass all possible ideals of science in their beautiful adaptation to the uses they are designed to subserve. Considered chemically, their substance is nearly the same as that of the blood. The delicate vessels which make up the attenuated fibres, which together form the body of the muscles, are numbered by millions; and, while each

vessel appears a sentient and complete whole, they are gathered into companies, and act together as separate muscles. Through the whole the invisible power of life inflows, and is there changed into living force. Through this instrumentality Life, Reason, and all spiritual qualities are manifested upon the material plane.

Note 5. — Sleep.

Few conditions connected with the phenomena of the human body are more interesting to the student than that of sleep. It is a state so common that few consider the wonders involved in it.

Until we obtain some degree of knowledge of the manner in which the body lives and acts, the whys and wherefores connected with sleep are a profound mystery to us. The introduction of knowledge respecting the functions and order of the body and their maintenance affords us light, and discloses that sleep is an emergency that must be pro-

vided for. If neglected from any cause the body must sooner or later succumb to waste and decay. In the season of sleep the voluntary muscles are off duty and comparatively idle. They are now in a state to receive the care and nursing needful to repair their wasted condition, and fit them for the tremendous labors imposed upon them during wakefulness by their active taskmaster, the mind. We now see the wonderful provision designed to meet this emergency in the involuntary system which now has a free field in which to perform its necessary work, and with ceaseless activity refits and rebuilds the wasted vessels of the voluntary system. The labor incident to this refitting process, when understood, is something fabulous in amount. Consider alone the millions on millions of separate fibres or entities which go to make up the substance of the muscles, and that each one must have its appropriate attention. Any lack will react with pain and discomfort. All this labor is performed by the force of

life acting through the tireless, involuntary system.

It is only in sleep this labor can be performed in true perfection. No one would think of repairing a machine made up of wheels within wheels while the whole was in full motion.

The mind, being a spiritual organ, cannot make itself tangible in the world of matter without an instrument through which it may act. The mind does not control the involuntary system, except slightly, by sympathy. That system does not become wary, but the voluntary system is under the control of the mind, and it may be forced by the mind far beyond its natural powers of endurance. The mind itself does not sleep; it requires no rest; it is not matter, but spirit. It can think and reason, and when the tired muscles give token of overwork, the mind (if intelligent) will lighten their tasks and afford them refreshment; if unintelligent it has the power, and may force the muscles to complete

exhaustion, and this will induce sleep without regard to the mind.

It will now be understood why certain charges (alluded to elsewhere) when left upon the mind to be performed during sleep should interfere with the recuperating effects of sleep. It will also be seen that the mind is the same when the body sleeps or when awake.

It is well known that the body performs many actions, which are termed automatic, during wakefulness, and that these acts appear to be without the care or direction of the mind. We sometimes call these acts second nature. It is not true that such acts escape the attention of the mind. It is true that many acts are so completely learned that it requires hardly any perceptible force to perform them. Such acts do not cause friction and they appear to be the result of no mind, action; but it is only an appearance. The mind is watchful over all the labors of the body in wakefulness or sleep. If the mind

has learned the duty required of it, and such thing is left as a charge upon the mind to be done in sleep, it will be performed with the minimum of friction upon the body; on the other hand, if the mind but partially understands the charge so imposed, the friction or disturbance to the body will be at the maximum. This enables us to see the precise value of practice upon the muscles in order to secure comfort in our bodies during sleep.

The importance of good air during sleep is very great. Good air means a pure mixture of eighty per cent. nitrogen and twenty per cent. oxygen. Nitrogen is the builder of the body; oxygen is the board of health for the body. It clears away all rubbish, and prepares the ground to build upon. Oxygen is not life, but it prepares for life. It is said that there are six hundred million separate rooms in the human lungs, and these are all carefully swept and dusted out at each steady respiration during sleep.

SUPERINDUCING SEA-SICKNESS.

Citation. — Case J. F.

This case is of J. F., a young man of about twenty-two years; is connected with the U. S. Railway Mail Service. As is usual in that service, he is on and off service alternate weeks. He is a bright, quick, active man in body and mind. He has understood the system herein for preventing sea-sickness about one year; has tested it many times, and always with success. He was previously sick when on the water. On the 26th June, 1883, being out with a large pleasure party in a steamer of about two thousand tons register, he conceived the idea of experimenting, to induce upon himself sea-sickness, by using the regular rules.

The day was fine, the wind moderate; the swells about ten feet rise and fall; the position about thirty miles out. The course of the steamer during the experiment was oblique across the axis of the swells, affording a fair amount of roll and motion. There was quite a number among the company violently demonstrating their sickness. A larger number showed token of severe suffering, but took it pensively. Very few could disguise that they were not doing penance. J. F. was in high spirits and perfectly well. He now caused his body to become tense, like one ready for a dance. In a few moments (he thinks ten) his knees showed marked signs of weariness, — assuming a shaky state, with a tremor, more or less pronounced, running through his body. He found it quite difficult to retain any fixed position; was restless and uneasy. Soon his head commenced aching and increased apace, until it seemed as if it would verily split open. The vessel now seemed to be moving round and

round. Objects became confused and indistinct. His head now seemed to him as if it was twice its natural size and very heavy, but the pain in it was less. His thought began to work less rapidly. His throat became involved, as if knotted or strangulated, thereby obstructing his breathing. He became sensibly weaker. The very uneasy feeling had now passed away. Presently his whole internal economy became convulsed, calling for so much of his attention that his head and other parts were not noted or remembered. He was very soon forced to part with the contents of his stomach, which appeared to relieve him somewhat for the moment, but he was now so weak he could not move about, but could maintain himself in a chair, but he felt very uncomfortable. At this juncture he concluded he had done all the experimenting that he desired, and commenced retrieving himself according to the rules, which he found practical and easy, and at the end of one

hour and a half he found himself well and hungry; but he will not try this again, as his curiosity was abundantly satisfied.

The author was not present, nor was he informed of any such intention on the part of J. F. If the author had been advised, he would not have recommended so long continuance. There is a danger-line very near where J. F. ceased his experiment, which, if he had passed over it, he would not have had the power to recover himself without assistance. It would appear that J. F.'s mind still held the government over some portion of his muscular power, and such portion formed the rendezvous for the routed and disorderly element to fall into line and thus secure order.

This citation shows that this power of command over sea-sickness is enjoyed by man. It also discloses the stages of progress and the method which gravity uses to reduce his rebellious subjects to obedience and order.

The author, however, has found that the routine practiced by gravity in reduction is not alike in individuals, nor in the same individual at different times, but the final result is in all nearly the same. He has himself induced sea-sickness upon his body, and no headache would appear, but there would be abundant nausea, and at other times it would be *vice versa*. He has also had a whole deluge of symptoms upon him all at once, and the progress would so rapidly conclude that very little time was afforded for the mind to act in planning a retreat. Hence it is unsafe for one to experiment unless the person really is desirous of torture, and fully understands practically how bad sea-sickness is.

The idea that sea-sickness is a blessing in disguise is a pure fiction. This difficulty stands objectively before me in all its ugly deformity. It is naked and transparent to my mind. To me its methods are familiar even to the most bitter experience. After years

of patient and resolute explorations and careful observation upon myself and numbers of others, I pronounce it evil, and only evil! It is vicious, in all respects, upon the poor, innocent body. It lingers in my mind as absolutely piratical, and —

"*Linked with no virtue, but a thousand crimes.*"

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